



## **IEEE CINCINNATI SECTION NEWSLETTER - APR. 2009**

### **APRIL MEETING**

### **Tour of Duke Energy's Envision Center in Erlanger, KY**

**DATE:** Thursday, April 23, 2009  
**PLACE :** Duke Energy's Envision Center (see below for directions)  
4580 Olympic Blvd  
Erlanger, KY 41018  
**AGENDA:** 5:30 p.m. to 6:00 p.m. – Pizza and soft drinks provided  
6:00 p.m. to 8:00 p.m. – Tour

**RESERVATIONS:** Please email Fred Nadeau for reservations at <mailto:fnadeau1@earthlink.net> (preferred) or call the Section Voice Mail at 513-629-9380 by **Noon, Tuesday, April 21, 2009** if you plan to attend. Please leave your Name, IEEE Member Number, and a daytime telephone number.

### **SPACE IS LIMITED TO THE FIRST 25 PERSONS ONLY!!!!**

**PE CREDITS:** Depending on the subject matter, attendance at IEEE Cincinnati Section Meetings now qualifies the attendee for Professional Development Hours towards renewal of Professional Engineers Licenses. Required documentation will be available following the meeting! The Section Meetings also provide a great opportunity to network with fellow engineers in the area.

**ABOUT THE MEETING:** This month's meeting consists of a tour of Duke Energy's Envision Center Located in Erlanger, Kentucky, Duke Energy's Envision Center provides visitors a dynamic experience that demonstrates the possibilities of modernizing to smart grid and energy efficient technology.

The center features a movie-style studio with sets consisting of a substation with two-way digital technology, a smart home – complete with solar panels and a plug-in hybrid vehicle, an apartment complex with smart meters and a power delivery work center – monitoring conditions with real-time data. Electric poles equipped with intelligent power equipment are also staged throughout.

Center visitors can watch video presentations that showcase a day in the life of a variety of energy customers in the year 2015. Visitors will also experience simulated demonstrations such as a thunderstorm, lightning strike and power outage. Home simulations feature the use of an energy-management system to control high efficiency appliances (e.g., dishwasher, water heater, HVAC equipment).

Smart grid technology will enable:

- Improved system reliability and operational efficiency
- Quicker and more accurate response to outages
- Greater customer offerings (e.g., energy efficiency programs and payment options)
- New tools and programs that enable customers to predict and gain control of energy usage.

The center also promotes the importance of renewable power to meet the energy needs of tomorrow and how customers can play an important role in helping us reduce our carbon footprint.

Directions:

4580 Olympic Blvd, Erlanger, KY 41018

From Cincinnati, OH:

- Take I-75/I-71 South into Kentucky to I-275 West (towards the airport)
- Take Mineola Pike Exit (first exit off of I-275)
- GO LEFT on Mineola Pike
- At the second stop light, GO LEFT onto Olympic Blvd.
- Travel down Olympic Blvd past companies like Toyota and Pepsi
- The Envision Center is located in the last building on the left – Building C – before you intersect Turfway Road
- GO RIGHT into the parking lot in front of Building C. The Envision Center is at the end

From Columbus, OH:

- Take I-71 South toward Cincinnati, OH
- Merge onto I-71 South via Exit 99A on the LEFT toward Cincinnati (crossing into Kentucky)
- Take I-75/I-71 South into Kentucky to I-275 West (towards the airport)
- Take Mineola Pike Exit (first exit off of I-275)
- GO LEFT on Mineola Pike
- At the second stop light, GO LEFT onto Olympic Blvd.
- Travel down Olympic Blvd past companies like Toyota and Pepsi
- The Envision Center is located in the last building on the left – Building C – before you intersect Turfway Road
- GO RIGHT into the parking lot in front of Building C. The Envision Center is at the end

From Greater Cincinnati / N Ky Airport:

- Take I-275 East
- Take Mineola Pike Exit
- RIGHT on Mineola Pike
- LEFT onto Olympic Blvd.
- Travel down Olympic Blvd past companies like Toyota and Pepsi
- The Envision Center is located in the last building on the left – Building C – before you intersect Turfway Road
- GO RIGHT into the parking lot in front of Building C. The Envision Center is at the end

## **MEMBERSHIP NEWS**

### **NEW MEMBERS**

The following individuals are IEEE members who are new to our Section:

|                   |                    |              |
|-------------------|--------------------|--------------|
| Travis Boraten    | R. N. Hargis       | Suresh Vasa  |
| Charles S. Brown  | Chunyan Li         | Rui Wang     |
| Davis Debord      | David R. Miller    | Mingyu Zhong |
| Daniel L. Ford II | Ngozi Victoria Uti |              |

We wish to welcome these new members to the Cincinnati Section!!!

---

### **Scanning the Past: A History of Electrical Engineering from the Past**

*Submitted by Bob Morrison, Editor*

*Copyright 1995 IEEE. Reprinted with permission from the IEEE publication, "Scanning the Past" which covers a reprint of an article appearing in the Proceedings of the IEEE Vol. 83, No. 11, December 1995.*

#### **Harald T. Friis**

Seventy years ago this month, the PROCEEDINGS OF THE INSTITUTE OF RADIO ENGINEERS (IRE) included a paper on directional radio receiving systems by Harald T. Friis. At the time he was employed as a research engineer at the Bell Telephone Laboratories where he made numerous contributions to telecommunication engineering. He was later to become a recipient of the IRE Medal of Honor and other awards.

Friis was born in 1893 in Naestved, Denmark, and graduated in electrical engineering from the Royal Technical College in Copenhagen in 1916. He then spent about two years at the Royal Gun Factory in Copenhagen. In 1919 he received a fellowship which enabled him to come to the United States where he studied radio engineering at Columbia University under John H. Morecroft. In 1920, Friis joined a research group headed by Edwin H. Colpitts at the Western Electric Company, a group which became part of Bell Laboratories in 1925.

Friis initially was assigned to investigate radio reception from ships at a station in Elberon, NJ. He designed a double-detection superheterodyne receiver and undertook a long series of measurements of field strength and noise over a wide range of frequencies. He developed techniques to compensate for signal fading and used oscillographs to determine phase differences and other propagation phenomena. He and two colleagues published an important IRE paper on radio transmission measurements in 1923. They stressed the need to measure signal to noise ratio rather than field strength alone and discussed how to achieve satisfactory radio communication while minimizing equipment cost. Friis published further results of his research in his December 1925 IRE paper on directional antennas, in a 1926 paper on the static recorder in the Bell System Technical Journal, and in a May 1928 IRE paper on oscillographic observations.

Friis assisted in the design of the receiving system used by his colleague, Karl Jansky, to detect and record galactic radio noise in the early 1930's. These observations launched the new science of radio astronomy. Friis and Edmond Bruce were co-inventors of the rhombic antenna which came into wide use as a shortwave antenna. Friis subsequently designed a multiple-unit steerable antenna (MUSA) which employed an array of rhombics and was altered electrically for optimum reception of shortwave signals. He received the Morris N. Liebmann Award of the IRE in 1939 in recognition of his many contributions to radio science and engineering.

In 1938, Friis became the director of a research team at the Holmdel laboratory facility of Bell Labs with the mission of developing microwave systems. He and a colleague, Alfred C. Beck, designed a horn-reflector antenna and the Holmdel group went on to develop both microwave radar and communication equipment used by the military during World War II. Friis invented an ingenious "rocking horse" mechanical scanner for a radar

set used to locate enemy mortars. In a May 1946 IRE paper, he disclosed a radar transmission formula which had proven useful to the group at Holmdel. A microwave relay network based on their work was installed for commercial use in the US soon after the war.

In 1954, Friis received the Valdemar Poulsen Medal of the Danish Academy of Sciences and, the following year, the IRE Medal of Honor. He also received the Ballentine Medal from the Franklin Institute in 1958 and the Mervin Kelly Award of the IEEE in 1964. He retired from the Bell Labs in 1958 but continued work as a research consultant to the Hewlett-Packard Company for the next decade. His autobiography, entitled *Seventy Five Years in an Exciting World*, was published by the San Francisco Press in 1971. He died in 1976 at age 83.

*James E. Brittain  
School of History , Technology and Society  
Georgia Institute of Technology*

---

## **IEEE NEWS**

### **Biomedical Engineering Student Recognized as IEEE's 'New Face of Engineering'**

**WASHINGTON (17 March 2009)** -- Guruprasad Madhavan is working on neuromuscular stimulation approaches that may help prevent osteoporosis, heart failure and mild cognitive impairment -- all related to low blood pressure.

Madhavan's research is a major reason why he was selected the IEEE/IEEE-USA's 2009 "New Face of Engineering."

"My energy to perform better has multiplied, and so has my responsibility to better communicate engineering," Madhavan said after being selected.

The New Faces of Engineering is sponsored by the National Engineers Week Foundation, a coalition of engineering societies, major corporations and government agencies. The program highlights the vitality, diversity and rich contributions of engineers under 30.

Each engineering society's top choice must hold an engineering degree, be employed as an engineer from two to five years, and have worked with projects that significantly affect public welfare or further professional development and growth.

Madhavan is one of 14 engineers recognized for this international honor. They were featured in a full-page ad that ran in USA Today on 16 February.

Madhavan, 29, is completing his doctoral degree in biomedical engineering at Binghamton University, State University of New York. His research is focused toward non-invasively and non-pharmacologically stimulating the calf muscle pump -- also referred to as the "second heart" -- to enhance circulation.

The contractions of calf muscles help in propelling deoxygenated blood back to the heart against gravity. External stimulation of the lower leg musculature could help enhance venous return and cardiovascular recirculation of oxygen-rich blood.

Madhavan was born in a village in Tamil Nadu, a state in southern India. He became the first person in his family's history to earn an engineering degree when he received his bachelor's (honors with distinction) in instrumentation and control engineering from the University of Madras (India) in 2001. He added a master's degree in biomedical engineering from Stony Brook (N.Y.) University in 2002 and an MBA in leadership and

healthcare management from Binghamton in 2007. He has also worked in the medical device industry as a research scientist.

In November 2007, Madhavan became the first person in the United States to receive the United Kingdom's Institute of Engineering and Technology's Mike Sargeant Career Achievement Award. The honor is given to the young professional deemed to have made the most significant career progress over a number of years. Madhavan, who received the award in London, was recognized for his medical device research.

Last fall Madhavan was selected for a science, technology and economic policy fellowship at the National Academies in Washington. He believes that this experience has helped prepare him for a career in public policy related to economic development and sustainability issues. Madhavan is also senior editor of "Career Development in Bioengineering and Biotechnology" (Springer, 2008), a volume designed to introduce students, professionals and the public to the diverse career and sustainable-development opportunities within bioengineering, biotechnology and related fields.

An ad hoc committee of IEEE members Paul Kostek of Seattle; Sarah Rovito of Arlington, Va.; Abby Vogel of Atlanta; and Terry Malkinson of Calgary, Alberta, Canada, selected Madhavan as the IEEE/IEEE-USA's New Face.

The committee's other top choices are at <http://www.eweek.org/site/Engineers/newfaces2009/IEEE.shtml>.

For more on all the 2009 "New Faces" honorees, go to <http://www.eweek.org/site/Engineers/newfaces2009/index.shtml>

### **IEEE-USA IN ACTION: \$3,000 IN HONORARIA PRESENTED TO TWO JOURNALISTS WHO HAVE ADDED TO PUBLIC UNDERSTANDING OF ENGINEERING**

For the first time, IEEE-USA has awarded two \$1,500 honoraria to recognize print and electronic journalists who have added to a greater public understanding of the contributions of engineering and computer professionals to society.

The two award winners were recognized by 2008 IEEE-USA President Russell Lefevre at the organization's annual meeting in Salt Lake City on 28 February: Alan Boyle, science editor of MSNBC.com, for his series of articles on future engineering challenges; and John Dodge, editor-in-chief of DESIGN NEWS, for his series of articles on key new technologies in the Boeing 787 Dreamliner.

Past award recipients have included NPR's Richard Harris (1991); the CHICAGO TRIBUNE's Jon Van (1993); THE WALL STREET JOURNAL's G. Pascal Zachary (1998); and Jon Katz, for his book, "Geeks: How Two Lost Boys Rode the Internet Out of Idaho" (2000).

To see articles written by the 2008 IEEE-USA journalism award winners, go to:

<http://www.msnbc.msn.com/id/16545946>; and  
[http://www.designnews.com/blog/Design\\_engineering\\_at\\_large/205-Boeing\\_s\\_787\\_Dreamliner\\_aims\\_to\\_improve\\_flying.php](http://www.designnews.com/blog/Design_engineering_at_large/205-Boeing_s_787_Dreamliner_aims_to_improve_flying.php)

## **The IEEE Cincinnati Section Executive Committee** **Member Names and Phone Numbers**

Cincinnati Section Voice Mail

513-629-9380 (call for meeting reservations)

|                                         |                                                                                                                |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Section Web Page                        | <a href="http://www.ieeecincinnati.org/">http://www.ieeecincinnati.org/</a>                                    |
| Charlie Nash - Chair                    | 513-576-3612, <a href="mailto:cnash@ieee.org">cnash@ieee.org</a>                                               |
| Steve Olenick - Vice-Chair              | 513-791-2064 (Office), <a href="mailto:solenick@cinci.rr.com">solenick@cinci.rr.com</a> ,                      |
| Brian J. Resnick - Treasurer            | 513-701-5792 (Office), <a href="mailto:Brian.Resnick@ieee.org">Brian.Resnick@ieee.org</a>                      |
| Marwan Nusair - Secretary               |                                                                                                                |
| Marc A. Bell - Member-At-Large          | 513-287-2452 (Office), <a href="mailto:marc.bell@ieee.org">marc.bell@ieee.org</a>                              |
| Laurie Tappel - Member-At-Large         | 513-397-6383 (Office), <a href="mailto:laurie.tappel@cinbell.com">laurie.tappel@cinbell.com</a>                |
| Fred Nadeau - Arrangements Chair        | <a href="mailto:f.nadeau@ieee.org">f.nadeau@ieee.org</a>                                                       |
| Jim Everly - Student Activities         | 513-777-7129, <a href="mailto:j.everly@ieee.org">j.everly@ieee.org</a>                                         |
| Frank Zhou – Membership                 | 513-556-6552 (Office), <a href="mailto:xuefu.zhou@uc.edu">xuefu.zhou@uc.edu</a>                                |
| David Pettigrew - EMBS Chapter<br>Chair | 513-558-3596 (Office), <a href="mailto:pettigdb@email.uc.edu">pettigdb@email.uc.edu</a>                        |
| Bob Morrison - Newsletter Editor        | 513-287-3697 (Office), 513-287-4493 (Fax),<br><a href="mailto:j.r.morrison@ieee.org">j.r.morrison@ieee.org</a> |